REMARKS/ARGUMENTS

The office action of November 6, 2007 has been carefully reviewed and these remarks are responsive thereto. Reconsideration and allowance of the instant application are respectfully requested.

The Drawings are objected to for not including descriptive labels. Attached are revised drawings containing descriptive labels.

Claim 1 stands rejected under 35 USC 112, first paragraph. As identified by the original claim, specification, and abstract, the power supply block converts the voltage from the electrical network of the vehicle into suitable values for providing power supply to all blocks of the system. However, claim 1 was amended to delete the term "Power Supply Block." The driving block drives the motor/s in order to move the antenna in desired direction. See for example, specification page 3, lines 11-12. Withdrawal of this rejection is requested.

Claims 1-9 stand rejected over Hsuing (U.S. 6,377,211) and Park (6,191,734). Claim 1 recites a tracking system for flat mobile antenna, comprising sensors for angular velocity to sense the rotation of the antenna around its axes; inclination sensors for measuring the inclination of the antenna toward a vertical axis; a control block to calculate necessary corrections of the direction of antenna beam, the control block being connected to outputs of the sensors for angular velocity and the inclination sensors and to inputs of a driving block and a block for electronic beam control; at least one motor for changing the orientation of the antenna, the motor being connected to the output of the driving block and to an antenna panel; and the block for electronic beam control being connected to the antenna panel.

Hsiung describes an *open* loop tracking system comprising sensors and GPS module. In contrast, Park describes a *closed* loop system using information for the received signal strength and the same time angular rate sensor for sensing an absolute angular rate of the antenna rotating platform. On the other hand the instant claims are directed to a tracking system using *the combination of* a closed and open loop tracking system in order to achieve best performance and lower cost of the antenna tracking system. Neither Hsuing nor Park teaches or suggests such a system.

Moroever, Husing states that "DSP 112 also receives signals representing vehicle roll, inclination (pitch) and azimuth angle (yaw) from the appropriate sensor 116 mounted on the

vehicle" *i.e mounted on the platform attached to the vehicle.* As recited in instant claim 2, angular velocity sensors are fixed with (mounted on) the antenna and since the panel is rotated around its azimuth axis, the sensors are not oriented in general toward the roll, pitch and yaw axes of the vehicle. The claimed arrangement of the sensors provides an advantage that it is not necessary to measure the absolute orientation of the antenna panel with respect to the vehicle thus avoiding the cost of additional sensors. That is, it is not necessary to align precisely the antenna to the vehicle.

Further, Hsiung states that "the pointing direction is corrected for pitch, roll and yaw of the vehicle". This is not a forward coordinate transformation because the primary axes of its preferred embodiment are also pitch, roll and yaw and hence no reverse coordinate transformation is disclosed. In contrast, claim 3 recites a reverse coordinate transformation. The data of this correction are stored in the memory of the control block and used to correct sensor data even during the periods of satellite signal blockage. This helps to keep antenna orientation toward the satellite during the periods of signal blockages. That is, when the signal appears again, reception is immediately restored.

Park describes "Subsequently, beams are sequentially searched at predetermined intervals in the elevation direction". That means that each beam (basic and tracking beam) is held for a fixed time interval. Turning to instant claim 6, the strongest beam (that which direction is the closest to the exact direction toward the satellite) is held longer time that the neighboring beams (tracking beams) and so the antenna beam are switched at non regular time intervals. An advantage is that the signal to noise performance of the antenna is less affected by beam switching in the process of tracking.

In a system comprising 3 sensors for angular velocity (e.g. gyroscopes), there are 3 independent variables describing the offset error of each of them. By measuring satellite displacement from the estimated position (when satellite signal is available) it is possible to estimate the errors only in two degrees of freedom – azimuth and elevation. So, mathematically it is not possible to calculate the real values of all 3 offset errors independently. In order to solve this problem, instant claim 7 recites additional corrections for two of the sensors for angular velocity. On the other hand, Hsiung recites that the DSP processes the sensor signals and drives the motors to keep the beam oriented to the satellite. The antenna, described in Hsuing uses an

open-loop tracking based on a navigation system, providing the absolute orientation toward North and horizon. Thus the benefit of instant claim 7 is not recognized by Hsuing.

Instant claim 8 describes a method for obtaining of suitable corrections for the horizontally mounted gyroscopes, residing on a land vehicle, even without using of additional sensors and feedback from measuring the satellite signal. The idea behind the method is that the movement of the vehicle around the pitch and roll axes is limited by nature, so if the sensors on these axes sense continuous motion, it is most likely because of sensor drift. The method uses integration of gyroscope output for certain interval, thus obtaining the angular displacement during it and depending on the sign of the displacement applies a corrections in a small step to the stored offset value for the given gyroscope in such a way that it will cancel the gyroscope offset error after some (usually long) period.

According to Hsiung, "the pointing direction is corrected for pitch, roll, and yaw of the vehicle, and if necessary for the distance traveled due to the speed of the vehicle." So, Hsuing claims corrections based on a sensor system, which measures the vehicle orientation (Crossbow HDX-AHRS). Claim 8 does not require any such additional sensors. Withdrawal of this rejection is requested.

CONCLUSION

In view of the above amendments to correct informalities, cancellation of the withdrawn claims, and remarks, issuance of a Notice of Allowance is respectfully requested.

If any additional fees are required or if an overpayment is made, the Commissioner is authorized to debit or credit our Deposit Account No. 19-0733, accordingly.

Respectfully submitted,

/Susan A. Wolffe/
Susan A. Wolffe
Registration No. 33,568

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Banner & Witcoff, Ltd.
1100 13th Street, N.W. Suite 1200
Washington, D.C. 20005-4051
Tel: (202) 824-3000
Fax: (202) 824-3001